Early Childhood Integrated Data Systems Toolkit

Guide

Contents

Introduction

This guide supports early childhood integrated data system (ECIDS) Leadership Teams completing the *ECIDS Toolkit Self-Assessment Tool* to determine their needs as they develop and enhance an ECIDS and integrate ECIDS data into a P-20W+ (early childhood through workforce) statewide longitudinal data system (SLDS). It provides background information and explains areas of consideration related to the seven components of the SLDS Framework:

- Purpose and Vision
- Project Planning and Management
- Stakeholder Engagement
- Data Governance
- System Design
- Data Use
- Sustainability

The components of the framework are not linear. ECIDS teams often start with the components where they currently have capacity and resources. More information about the SLDS Framework is available at *https://slds. ed.gov/#program/slds-framework*.

Visit the ECIDS Toolkit at *https://slds.ed.gov/#program/ecids-toolkit* to

- complete a self-assessment to determine your ECIDS Leadership Team's needs related to each component of the framework;
- learn more about the common challenges related to each component and strategies for addressing them; and
- browse best practices resources related to each component.

Purpose and Vision

An effective **purpose statement** succinctly describes the reasons for which the ECIDS has been built and the tangible value of the system. It outlines the scope of the ECIDS and how key stakeholders use it.

The **vision statement** is an aspirational description of how the ECIDS supports the state's long-term early childhood goals. The ECIDS vision statement should focus not on the data system but on how the use of information will improve the education and other outcomes of young children in the state.

The purpose and vision should inform every phase and all the other components of the ECIDS work. Well-articulated purpose and vision statements enable states and territories to maintain the intended scope of work while planning for the system to expand and mature. States must be able to communicate what the ECIDS will be able to provide as well as what it will not provide.

Together, the purpose and vision statements communicate the ECIDS's reason for being, what it aims to produce, and how it contributes to the state's long-term early childhood policy and program goals. They are foundational to an ECIDS or to any data system.

Documenting and communicating the purpose and vision

Documenting and communicating the ECIDS's purpose and vision sets the tone for the data system work and helps determine its scope. Documentation includes identifying the audiences whom the ECIDS will serve and defining which early childhood data (e.g., program, health, or assessment data) the ECIDS will include. Although establishing a common purpose and vision among participating partners can be challenging, doing this work up front will help ensure that subsequent decisions are strategic and coordinated and that the ECIDS becomes a sustainable statewide resource.

To facilitate this process, consider using your state's Early Childhood Advisory Council (ECAC), which generally includes diverse and comprehensive representation from early childhood programs. Alternatively, some states develop a data governance group that includes leaders from agencies and organizations participating in the ECIDS. This group may be a committee of the state's ECAC, or it may be a separate group designed to lead the ECIDS planning process. The group provides input, but the ECIDS Leadership Team typically documents the purpose and vision and obtains stakeholder feedback. Involving stakeholders in developing the purpose and vision helps to ensure that everyone has the same expectations for how the system will help the state. Stakeholders can also provide valuable feedback on both the content of the purpose and vision statements and how the public is likely to receive them.

The ECIDS purpose and vision should address the following questions:

- What value will the ECIDS bring to the state?
- What will the ECIDS provide that the state cannot currently do?
- How will the ECIDS support the use of data to inform decisions?
- Which decisions or essential questions will the ECIDS support?
- Whom will the ECIDS serve?

Make clear early in the ECIDS planning process what information the ECIDS will provide, its significance, and how it will support young children and families. Communicate the ECIDS's value in terms of the number of users who will benefit (e.g., parents, children, program staff, state administrators, and researchers). Additionally, craft purpose and vision messages for specific audiences to help them understand how the ECIDS will affect them directly. To be effective, the purpose and vision statements need to be informed by each audience's interest (i.e., what the ECIDS can do for them) and communicate the system's significance accordingly.

Establishing essential questions

Establish the essential questions that you hope to answer using the ECIDS. These questions usually fall into four general categories:

1. Policy
2. Program/Operational
3. Research
4. Instructional

You can focus on one or multiple categories. If you have questions in multiple categories, consider a phased planning approach to meet the needs of each user group over time and demonstrate the value added during each phase. Developing essential questions takes time and input from a diverse group of potential end users. Researchers can be a great resource during this process to help ensure that the questions are answerable, relevant, and aligned with the ECIDS's intended outcomes.

Considering linkages to P-20W+ data

If your state is developing or has a P-20W+ SLDS, the P-20W+ core team should document its purpose and vision for integrating early childhood data into the SLDS. The P-20W+ purpose and vision for early childhood data typically is a different set of statements from the ECIDS purpose and vision, but they should complement one another. Early childhood representatives should participate in developing the P-20W+ statements. The early childhood representatives will need to be able to articulate which early childhood users the P-20W+ SLDS will serve and how the P-20W+ SLDS's information will allow those users to make decisions or behave differently. As with the ECIDS purpose and vision, the P-20W+ SLDS's purpose and vision for early childhood data should reflect the interests of the audiences the system will serve.

Project Planning and Management

Project planning is deciding in advance the work to be done, including when, where, how, and by whom, in order to achieve the identified purpose and vision for the ECIDS. It includes establishing a detailed project plan with a defined scope of work detailing tasks, activities, and milestones, as well as documenting roles, responsibilities, and procedures that will support the development, implementation, use, and ongoing maintenance and enhancement of the ECIDS. **Project management** entails the execution of the project plan, including monitoring progress and adjusting it over time to reflect changes in context, needs, and resources.

Planning and management are critical to effectively leading an ECIDS initiative. They establish a course of action for achieving the ECIDS's goals. Good planning and management help an ECIDS team respond appropriately to the needs of multiple internal and external stakeholders and navigate the intricacies of early childhood programs and services statewide.

Establishing an ECIDS Leadership Team

States approach ECIDS leadership in a number of ways, but in general the ECIDS Leadership Team is responsible for

- deciding who will manage the ECIDS work;
- determining how end users will provide input into the ECIDS's functionality;
- establishing ECIDS data use strategies to inform decisions or change behaviors;
- advocating for and gaining support for the ECIDS from key statewide leaders;
- coordinating work across and between agencies, programs, and data systems; and
- guiding project planning and implementation, including funding.

In some states, legislation defines the ECIDS leadership structure. Alternatively, states may rely on precedents or practices from other states to help inform the makeup of the ECIDS Leadership Team and how it will operate. Some states have connected ECIDS leadership to their P-20W+ SLDS leadership, and some have conducted state inventories or held roundtables with early childhood programs to identify existing data system leadership responsibilities. Regardless of the approach used, the ECIDS Leadership Team will benefit from having members who represent a variety of early childhood stakeholder groups.

As ECIDS planning moves forward, it will become clear which agencies and programs are most actively engaged. The ECIDS Leadership Team's membership should reflect partners' levels of engagement. As a result, ECIDS Leadership Team members will change over time, demonstrating the ECIDS's flexibility to adjust to new priorities and requirements.

The ECIDS Leadership Team is responsible for advocating for and identifying the resources necessary to ensure the project's success, including staff capacity to develop and manage the project plan. These resources take different forms and range from financial support to meeting room space and conference telephone lines.

It is important to determine and document the criteria for membership in the ECIDS Leadership Team, along with the team's roles and responsibilities. This documentation will help onboard new programs and agencies to the ECIDS as well as existing program and agency participants in case of staff turnover.

Developing and implementing an ECIDS project management plan

The ECIDS Leadership Team is typically responsible for overseeing development of the ECIDS project plan as well as communicating and coordinating its execution with those involved in the system's development. The project plan should be documented early in the planning process and should be flexible enough to meet unexpected challenges. When overseeing development of the project plan, the ECIDS Leadership Team must consider the funding needed to support the work in the project plan, keeping in mind the ECIDS's purpose and vision. The ECIDS Leadership Team may also decide to pursue funding streams beyond federal and state sources, such as data system-related grants offered by philanthropic organizations.

The project plan must accommodate changes as needed throughout the development of the ECIDS, since not every task needed to complete the project can be anticipated from the start. At a minimum, the project plan should include goals (or milestones), objectives (or tasks), key deliverables, timelines, and resource assignments. A solid project plan will address the questions "What?," "Who?," and "When?" (**TABLE 1** on page 6).

Communication is central to the success of any project. All ECIDS stakeholders need to be informed about the project plan and receive regular updates on its progress. The project plan should include the person or agency responsible for reporting progress to each key stakeholder group. A communications plan can help identify messages tailored for different stakeholders depending on their needs, the individuals responsible for keeping those stakeholders updated, and when

TABLE 1. Key considerations for an ECIDS project plan

What?	Who?	When?
The steps needed to accomplish the purpose and vision	The leaders, agencies and programs, or individuals held accountable for accomplishing project goals and deliverables	• Dates for major milestones • Dates for minor milestones for the ECIDS Leadership Team to verify as the project moves forward • When stakeholders will be engaged (provide a specific timeline, and be very clear about who is responsible for the project and who is assisting)

the updates occur. Alternatively, communications strategies and assignments can be included in the project plan. Communications strategies might include regular updates about the project plan, regular status update meetings with the ECIDS vendor(s), and informing stakeholders when milestones occur.

Building out the project plan

The ECIDS project manager, with input and guidance from the ECIDS Leadership Team, should take the following steps to develop the project plan:

- Determine the key deliverables aligned to the purpose and vision, then identify the milestones needed to reach each deliverable.
  - Include deliverables coming from vendors and tasks that will impact other activities in the project plan. These tasks are commonly called dependencies.
- Outline tasks and activities to achieve each milestone.
- Identify who will be responsible for each task and activity.
- Establish timelines for tasks and activities.
- Capture the status of each task and activity.

The following related resources also can be included in the project plan or attached as appendices:

- **Risk log** that tracks risks and issues with vendors and defines the escalation and resolution process
- **Budget** that aligns to the project plan
- **Version log** noting historical versions of the plan and the changes made to it over time
- **Communications plan** that outlines updates to be shared with each stakeholder group, who will share them, and when

Consider adding tasks to the project plan that cover reviews of legal and procedural requirements that might affect the project. Many states have legislation that affects how data can be collected, stored, and accessed. Reviewing relevant legislation will help avoid unforeseen obstacles to the ECIDS. Legislative staff members can help the ECIDS Leadership Team understand and define the impact of early childhood legislation and promote legislative changes when needed. When legislators and their staff are on board with the goals and direction of the state's early childhood community, they are more likely to help sustain the ECIDS and P-20W+ SLDS when state budget appropriations are needed. Similarly, if the ECIDS project is hindered by a lack of state legislation, the ECIDS Leadership Team can use its relationships with legislative staff members to begin crafting legislation to support the system. Involve policymakers in the ECIDS from the beginning to secure their buy-in for the project and their help sustaining it in the future.

Aligning the ECIDS project plan to the P-20W+ SLDS project plan

If your state is developing or has a P-20W+ SLDS, the ECIDS Leadership Team should include the P-20W+ planning group's early childhood representative to ensure coordination between the two projects. As part of its broader communications approach, the ECIDS Leadership Team should determine how it will communicate its project plan, how the plan may impact the P-20W+ SLDS, and how the two teams will share progress on early childhood data work that affects both systems. The two projects often will have separate project plans, but some states have connected the plans for both systems. Whether the plans are separate or joint, make sure that the two systems' project plans align with each other, show where each project will leverage resources from the other to avoid duplicated efforts, and meet their intended purpose and vision.

Stakeholder Engagement

Stakeholder engagement is the process by which those leading the ECIDS work involve the groups that contribute to and are served by the system. These parties will vary depending upon the scope and purpose of the ECIDS. Effective stakeholder engagement is essential to a successful ECIDS because it ensures that the system's priorities, strategies, and execution respond to the expectations and needs of those it intends to serve. As a result, effective stakeholder engagement promotes broader ownership of the ECIDS and increases its perceived and actual value to users, which bolsters sustainability.

Because an ECIDS involves a wide range of early childhood programs, data contributors, and other stakeholders, it is critical to have a well-established and well-communicated stakeholder engagement plan that outlines how key players will be involved in the work in purposeful ways.

Identifying and selecting key stakeholders

The ECIDS Leadership Team needs to engage the right stakeholders in planning the ECIDS's development. Identifying these stakeholders can be challenging with many different types of early childhood programs and many different funding streams and sources for early childhood data (**TABLE 2**). Begin the process by using the state's inventory of early childhood programs and the resources of the state's Early Childhood Advisory Council (ECAC) to identify stakeholders

who are essential to the project. Due to its diverse representation, the ECAC can provide a ready-made stakeholder group. Many ECACs were designed to serve as centralized coordinating bodies for strategic planning and early childhood data analysis. ECACs may have already developed or be in the process of developing data workgroups or committees concerned specifically with coordinating data among early childhood programs. Researchers can also offer excellent support and expertise to the ECIDS. Additionally, consider involving policymakers and representatives from the ECIDS's funding sources.

The ECIDS Leadership Team should determine the key individuals whose involvement is critical to the project, as well as ensure that they fully understand the purpose of the ECIDS and can speak to its vision, mission, and purpose. Document the stakeholder identification process to provide transparency, justify the involvement of certain stakeholders, and articulate the value of their participation. Documentation helps formalize the process for adding stakeholders, allowing the project to move forward without interruptions when new stakeholders are added. As the ECIDS Leadership Team develops its stakeholder engagement plan, it must consider how to involve stakeholders who are not currently engaged but should be.

Regardless of how they are identified, all stakeholders need to know and trust that the stakeholder engagement process is fair, transparent, and free from political motivation, and that the well-being of

TABLE 2. Potential ECIDS stakeholders

Policymakers	State Agencies	Local Programs	Advocates	Researchers	Parents
Legislators	Health and Human Services	Child care	Political organizations	State agencies	Individuals
Governor's Office		Head Start and Early Head Start	Businesses	Local colleges and universities	Organizations
Executive leaders	Education and Early Learning	State prekindergarten			
	Children and Families	IDEA Part C Early Intervention			
	State Information Technology	IDEA Part B 619 Early Childhood Special Education			
	Others (e.g., Labor)				

the state's young children will drive all decisions. Be transparent with stakeholders about how the ECIDS Leadership Team was established, how the state's list of prioritized needs was developed, and how decisions about the ECIDS are made. If stakeholders do not trust ECIDS leaders and processes, they may not buy into fully implementing and continuing work on the project.

Defining stakeholder roles and articulating expectations

In addition to identifying stakeholders, the ECIDS Leadership Team needs to clarify stakeholder roles and responsibilities as well as develop strategies to gain their buy-in. Not all stakeholders need to contribute to every phase of the ECIDS project. Limiting unnecessary stakeholder involvement is as important as ensuring diverse representation and knowing when to bring in the right people.

Ask the following questions when considering how to involve different stakeholders in the ECIDS project:

- Do they contribute data?
- Do they use data?
- What is their function and role?
- Is there a cross section of state and program stakeholders?
- Are they stakeholders or partners? A stakeholder is a person or group having an investment or interest in the ECIDS. A partner is a person or organization associated with the ECIDS who shares in both the risks and rewards of the joint effort.

Most importantly, the ECIDS Leadership Team must be clear about its expectations for stakeholders and what they will receive in return for their engagement. A strong stakeholder engagement plan is as important as the overall vision for the ECIDS. The plan identifies which stakeholders will be involved, when, why, how, and what their involvement will look like. It clearly describes the value stakeholders bring to the project, the purpose of including the stakeholders, the roles and responsibilities of the stakeholders, the processes that will be followed, when stakeholders will meet, how communications will occur, and how stakeholder input will be used.

The stakeholder engagement plan should include both formal and informal communications with stakeholders throughout the planning process. The ECIDS Leadership Team cannot rely solely on committees and meetings to communicate. The ECIDS's success relies on building relationships with stakeholders, including educating them and engaging them in determining how to use ECIDS data to serve the goals outlined in the purpose and vision. The

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Creating a stakeholder engagement plan

Identify the following items in the ECIDS stakeholder engagement plan:

- The stakeholders with whom the ECIDS Leadership Team will need to communicate
- The methods of communicating with those stakeholders
- What information the stakeholders need to know
- The resources, including fiscal and human resources, needed to communicate with stakeholders
- The individuals responsible for communicating with stakeholders, communication timelines, and accountability measures

Much like the project plan, the stakeholder engagement plan should be detailed and include timelines. The plan should also include steps to brand the ECIDS and develop materials such as presentation slides and other materials that will clearly convey the purpose and vision statements.

ECIDS Leadership Team also should ensure that stakeholders have frequent opportunities to discuss and respond to any project challenges that arise.

Keeping stakeholders informed

The ECIDS's success depends on how well stakeholders are engaged in the development process. The ECIDS Leadership Team needs to ensure that those responsible for implementing the stakeholder engagement plan have full access to it, and the team should receive regular updates on its progress. The plan should identify who is responsible for executing it and updating the ECIDS Leadership Team.

The ECIDS Leadership Team needs to build trust among stakeholders by sticking to the project plan, facilitating ongoing communication, and responding to their input. Webinars, webpages, conference calls, electronic communications methods, and file-sharing platforms can help collaborative planning. Give stakeholders specific dates and times that project materials and publications will be delivered. Above all, listen to stakeholders and follow up with them promptly. When asking stakeholders for input, advice, or other feedback, the ECIDS Leadership Team should make clear how it will gather, compile, consider, and ultimately use or not use that input. All stakeholder engagement activities and decisions must be transparent. If stakeholder feedback leads to decisions or changes, make sure to notify stakeholders of those changes.

Although a variety of stakeholders should be involved in developing the ECIDS, keeping them engaged–and engaged at the right times–can be a challenge. The ECIDS Leadership Team can maximize productivity and keep the work moving forward by considering how stakeholders will interact with one another and involving them accordingly. For example, separating stakeholders into policy-focused and data-focused groups may help streamline decisionmaking. Involving stakeholders with different roles, expertise, priorities, and concerns in all parts of the ECIDS development process sometimes causes frustration. At the same time, the stakeholder groups may need to work together for general project planning. New stakeholders may need to be brought into the project unexpectedly, such as when a program is undergoing a leadership transition. Consider how the ECIDS Leadership Team will handle such changes, and develop resources such as presentation slides and elevator speeches that quickly and concisely convey the purpose and vision of the project. Additionally, develop training materials for new staff members or leaders.

Coordinating with P-20W+ stakeholder groups

If your state is developing or has a P-20W+ SLDS and related stakeholder engagement team, the ECIDS Leadership Team should reach out to the early childhood representative(s) on the P-20W+ stakeholder engagement committee to ensure coordination between the two efforts. If the state's P-20W+ stakeholder engagement team does not have an early childhood representative, the ECIDS Leadership Team should work through the appropriate channels to ensure that early childhood stakeholders are included in the group, with the same roles and responsibilities as other P-20W+ representatives. As part of its broader communications approach, the ECIDS Leadership Team should determine how to communicate ECIDS decisions that may impact the P-20W+ work to the P-20W+ stakeholder groups, and how it will ask the P-20W+ stakeholders to communicate decisions that may impact the ECIDS.

Data Governance

Data governance is how organizations or groups of organizations make decisions about their collective information assets. It is both an organizational process and a structure. Data governance is essential to the successful planning, implementation, and use of an ECIDS because it ensures that all participating entities are represented in the decisionmaking process at both the leadership and implementation levels. It establishes responsibility for data quality, informs data use priorities, and provides a mechanism for establishing and continuously improving data policies and processes.

Integrating data from multiple sources requires ongoing decisions about how data will be defined, matched, stored, updated, used, and protected. It is important that all ECIDS partners contribute to these decisions to create a culture of shared accountability for the ECIDS's information assets.

Developing and documenting the data governance purpose

If your state already has a K12 or P-20W+ data governance program, the ECIDS Leadership Team should meet with the program coordinator for insight into its processes, roles, and membership. Partnering with the other data governance coordinator will allow the ECIDS Leadership Team to learn from and leverage work and resources already in place.

The ECIDS Leadership Team also should convene stakeholders from participating agencies and programs to discuss what data governance is and why it is important to the ECIDS. These stakeholders may include executive-level leaders, directors from each program area, program data stewards, and information technology (IT) staff members who are involved in the ECIDS. Input from these stakeholders will help design a data governance program and structure that meets the needs of the state and includes representatives from all agencies and programs contributing data to the ECIDS.

Developing and documenting a data governance structure

Most data governance programs have either two or three groups, depending on the data system's scope, staff capacity, culture, and structure. The data governance structure should include at least two groups–one at the executive leadership level and at least one at the implementation level–to ensure that the program has the leadership support required to be sustained and the detailed knowledge required to make informed decisions. A three-group structure is
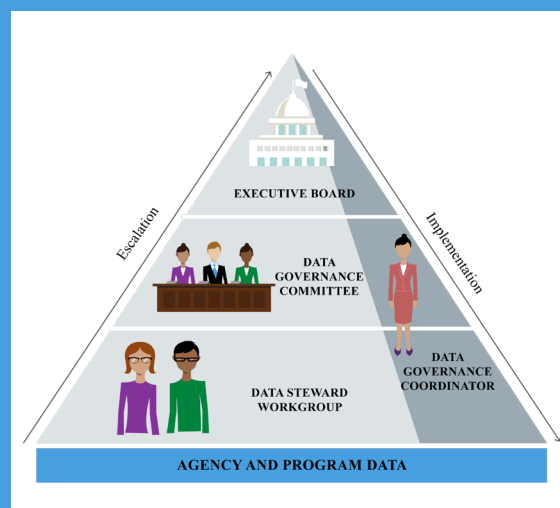
composed of an Executive Board, a Data Governance Committee, and a Data Steward Committee (**FIGURE 1**). In a two-group structure, data stewards are members of the Data Governance Committee and there is no distinct Data Steward Committee.

The Executive Board is responsible for establishing and sustaining data governance. It is composed of executive-level leaders of participating agencies and organizations. Representatives usually include each participating agency or organization's commissioner or a proxy, the chief information and/or technology officer, chief data officer, and the data governance coordinator. It can also include governor's advisors and program directors. These representatives are responsible for identifying the key policy, research, and programmatic priorities that will guide the work of the ECIDS and for ensuring that adequate resources are allocated to the effort. The Executive Board is also responsible for ensuring that the appropriate staff members are assigned to represent the agency as part of the other data governance groups and that data governance work is treated as a priority.

The Data Governance Committee focuses on implementing the vision and priorities set by the Executive Board, as well as establishing and maintaining policies and processes to manage and use ECIDS data. The committee is led by the data governance coordinator and is composed of directors and managers from each participating agency.

The Data Steward Committee is composed of staff members from participating agencies who have detailed knowledge of the data that their agency

FIGURE 1. A data governance structure with three levels

contributes to the ECIDS, as well as IT representatives. The committee may form ad hoc workgroups of data stewards to address specific problems or issues, or it may form one or more standing workgroups to support ongoing data initiatives.

The data governance coordinator is responsible for leading the overall direction and implementation of the data governance program and must be empowered to do so. The coordinator manages the establishment, monitoring, improvement, documentation, and training for the data governance program, as well as for data policies and processes.

Developing a data governance charter is critical to establishing and maintaining data governance. Through the charter, state and agency leaders acknowledge data as a critical resource and demonstrate their commitment to managing and using data to support the state's early childhood vision and goals. The charter provides strategic direction by creating a framework for decisionmaking about and accountability for how data will be managed across the early childhood sector. It also assigns stewardship responsibilities for participating agencies' data included in the ECIDS and empowers the Data Governance Committee to establish more detailed interagency standards, policies, and processes. It can also help orient new leaders and manage expectations across the participating groups and members, as well as communicate the purpose and scope of data governance to external stakeholders.

Developing and documenting data governance operations

Data governance operations define how the data governance program will execute its work, including the norms and practices that put the program's purpose, structure, policies, and processes into action. Data governance operations often are documented in a data governance manual, which

orients and trains staff members who are new to data governance and ensures that all data governance members understand the expectations for their roles and how they collaborate.

The data governance coordinator takes a lead role in drafting the data governance manual, but all members of the data governance groups should contribute to it to ensure that it reflects the work and that all parties adhere to it. In addition to the manual, a critical data issues log helps identify, describe, assign responsibility for, and track progress toward resolving important issues under the data governance program's purview. Set criteria for what constitutes a critical data issue and how to prioritize them. Make updating the critical data issues log a standing agenda item for the Data Governance Committee.

Developing and documenting data policies and processes

With the data governance structure and charter in place, the data governance groups can begin defining in more detail the policies and processes governing ECIDS data from collection to use. The data governance program will make and oversee several types of data policies, processes, and decisions, including

- a data access and use policy;
- a data request policy and process;
- a master source for data elements contributed by more than one agency or program;
- a collection and refresh schedule for all ECIDS data sources; and
- a process for adding new elements or sources to the ECIDS.

Coordinating with P-20W+ data governance efforts

If your state is developing or has a P-20W+ SLDS and a related data governance program, the ECIDS data governance groups should reach out to the early childhood representative on the P-20W+ Data Governance Committee to ensure coordination between the two efforts. If the P-20W+ Data Governance Committee does not have an early childhood representative, the ECIDS groups should work through the appropriate channels to ensure that each P-20W+ data governance group has an early childhood representative with voting rights. As part of their broader communications approach, the ECIDS data governance groups should determine how to communicate ECIDS decisions that may impact the P-20W+ work to the P-20W+ groups, and how the P-20W+ data governance groups will communicate decisions that may impact the ECIDS.

System Design

System design is the process of defining the technical architecture, components, modules, interfaces, and data for a system to fulfill specified requirements. The purpose of system design is to create a technical solution that satisfies the business needs and functional requirements, aligns with the overarching purpose and vision, and includes the implementation and ongoing maintenance of the system.

System design is influenced by a number of factors, including legal requirements, available resources, and intended uses of the system. Additionally, system design covers work to modernize ECIDS infrastructure over time. For example, many states are or are moving toward using cloud technology for infrastructure, platform, and software initiatives.

System design is essential to an ECIDS because it translates the business needs of the data contributors and data users into a technical infrastructure. Given the complexity and changing nature of the early childhood sector, as well as evolving state efforts to share ECIDS data with a P-20W+ SLDS, ECIDS system design needs to allow for ongoing improvements that enhance the system's performance and quality of its data linkages.

Aligning the ECIDS design with the state's long-term purpose and vision

Start planning the ECIDS system design by reviewing its purpose and vision. The ECIDS Leadership Team can use the ECIDS data governance manual and other resources to plan how the system design will meet ECIDS business requirements and answer essential early childhood questions.

When developing business requirements, start by assessing what early childhood programs exist in the state and what kind of data they collect. If the state has an Early Childhood Advisory Council (ECAC), that group might have this information already as part of its responsibilities outlined in federal legislation. The following programs collect and report data that could potentially be used in the ECIDS to answer the state's essential questions:

- State preschool or prekindergarten
- Head Start or Early Head Start
- Individuals with Disabilities Education Act (IDEA) Part C Early Intervention
- IDEA Part B Early Childhood Special Education
- Center-based child care

- Family child care
- Private early childhood programs
- Home visiting
- Early literacy programs
- Family support programs
- Early childhood workforce registry
- Licensing or accreditation

The ECIDS Leadership Team should consider how programs currently collect and use data and how the ECIDS could reduce burden and redundancies among data collectors. Identify challenges up front to begin working toward solutions early in the process. Engage stakeholders in discussions of both opportunities and challenges, as they will often have ideas for solutions. Consider opportunities to partner with agencies or programs with resources that would benefit the ECIDS.

Remember that not all data need to be included in the ECIDS or the P-20W+ SLDS; there should be specific reasons and processes for adding data elements that will help narrow the scope of the data system and, ideally, the funding needed to support it. The needs of the ECIDS's intended audiences should drive its design and implementation. For example, a system tailored to serve early care and education professionals will look different from one tailored to serve researchers. Ensure that the content, accessibility, and timeliness of the data included in the ECIDS will serve the intended audiences.

With limited time and resources, prioritize data to incorporate into the ECIDS and use a phased development strategy to make the system design work more manageable. Audiences should not expect the ECIDS to meet all of its requirements at its initial release; the system will most likely evolve based on current and future requirements.

Reflecting the current and continued needs for the ECIDS in its design

After establishing business requirements for the ECIDS, consider how its system model will align to the state's needs. If possible, building the ECIDS off of current systems and leveraging existing technology can be efficient, effective, and timely both in creating the data system's infrastructure and in training staff members.

If the state's existing IT infrastructure will not meet the ECIDS project's goals, a new system will need to be designed. There are three primary models for integrating early childhood data into an ECIDS or into the P-20W+ SLDS: centralized, federated, and hybrid.

FIGURE 2. Centralized data system model

Possible Data Sources

- Birth Registry
- Head Start and Early Head Start
- IDEA Part C Early Intervention
- IDEA Part B 619 Special Education
- Public School Early Childhood Education (e.g., Prekindergarten)
- Home Visiting
- Child Care
- Other Sources

Matching via a common identifier and integration

Centralized Data System

ECIDS

Presentation Layer

Reports
Dashboards
Dataset Exports

Integrated data can be used in a variety of interactive, static, digital, or printed reports and exportable data files for research

Under a **centralized data system** model (**FIGURE 2**), early childhood data from across all participating programs and agencies are copied to a single, centrally located data repository where they are organized, integrated, and stored using a common data standard. Once the data are incorporated into a centralized ECIDS, the state can then feed appropriate data into the P-20W+ SLDS, if needed.

Centralized models have the following strengths:

- Queries and reports can be run easily and in a timely manner.
- The ECIDS produces consistent data.
- It is easier to create a wide range of short- and long-term data reports.

Centralized models have the following weaknesses:

- The consolidated database requires extensive support, including a database administrator, storage capacity, and server.
- The public may be concerned about children's personally identifiable information being stored in one place or misused.

In a **federated data system** model (**FIGURE 3** on page 15), participating early childhood programs and agencies maintain control over their own data but agree through memoranda of understanding or data sharing agreements to share the data with other ECIDS partners upon request. The linked data are not stored by the ECIDS, but rather are cached, delivered to the requester, and then removed.

Federated models have the following strengths:

- There is no costly, centralized database to support.
- Fewer resources are needed.
- There are fewer concerns about storing all child-level data in a central location.

Federated models have the following weaknesses:

- Determining longitudinal cohorts across data systems is challenging.
- The system can only produce limited-purpose data files; long-term and stored datasets are not available.
- The system cannot produce reports that rely on persistent data linkages.

FIGURE 3. Federated data system model

Possible Data Sources
- Birth Registry
- Head Start and Early Head Start
- IDEA Part C Early Intervention
- IDEA Part B 619 Special Education
- Public School Early Childhood Education (e.g., Prekindergarten)
- Home Visiting
- Child Care
- Other Sources

Matching and Integration

Matched datasets are cached and then removed after they are delivered to requestors

ECIDS

Presentation Layer

Research Datasets

FIGURE 4. Hybrid data system model

Possible Data Sources
- Birth Registry
- Head Start and Early Head Start
- IDEA Part C Early Intervention
- IDEA Part B 619 Special Education
- Public School Early Childhood Education (e.g., Prekindergarten)
- Home Visiting
- Child Care
- Other Sources

Matching and Integration

Matched datasets are cached and then removed after they are delivered to requestors

Some linkages persist for future matching

ECIDS

Presentation Layer

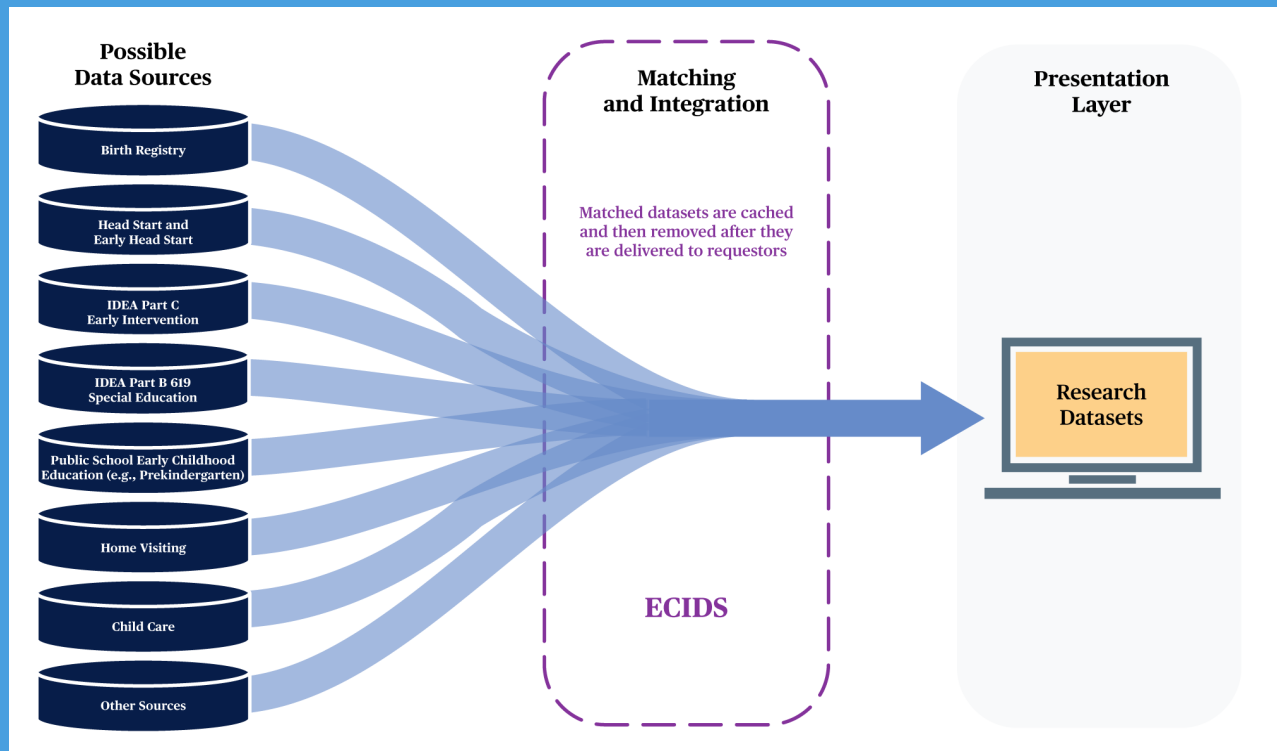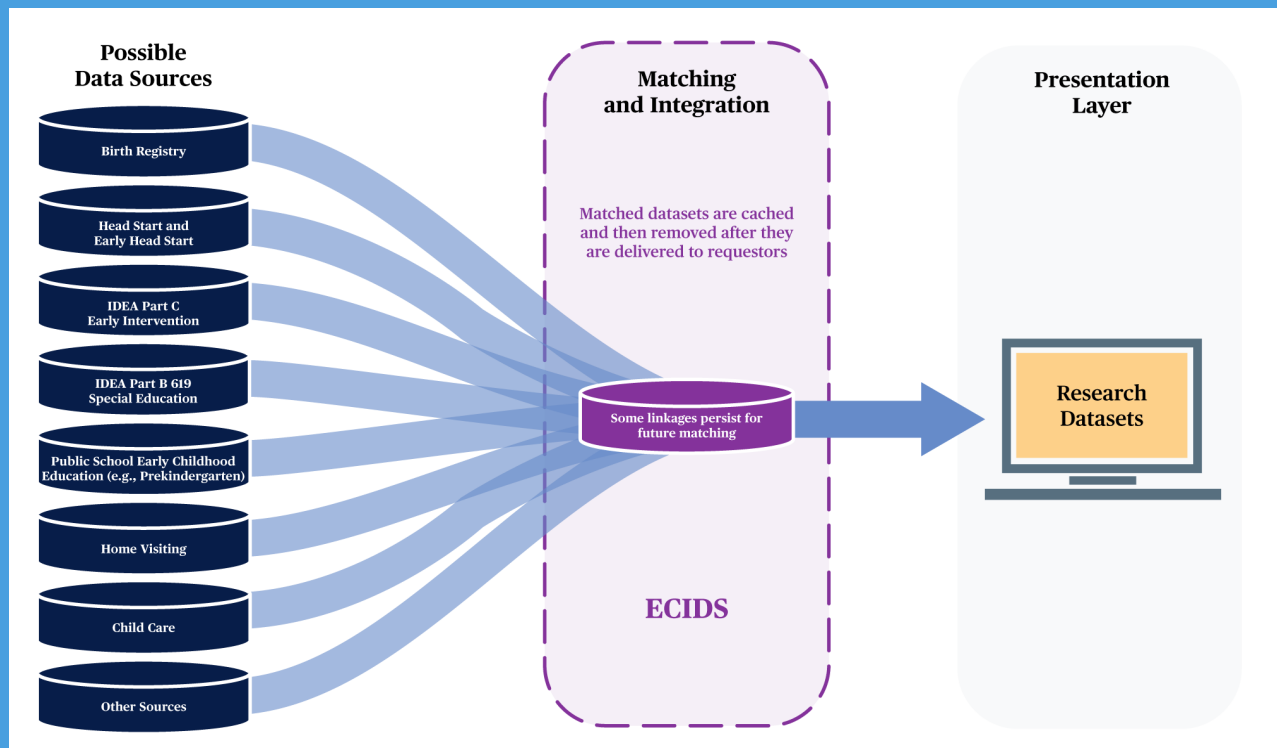Research Datasets

A **hybrid data system** model (**FIGURE 4** on page 15) combines features of the centralized and federated models to meet the state's unique circumstances. Early childhood data generally are not consolidated from across all participating programs and agencies. As in a federated model, each program or agency feeds appropriate data into the ECIDS or potentially into the P-20W+ SLDS directly from its own data source. However, as in a centralized model, linkages between data from multiple sources may persist in a hybrid model.

Hybrid models have the following strengths:

- The matching process is done only once.
- Persisting data linkages cut down on processing time.
- The system does not need a large central database or significant support to manage matched data.

The primary weakness of a hybrid model is that it faces similar reporting and cohort-defining challenges as a federated model.

States can take a number of approaches to protecting personally identifiable information (PII) across all three types of data models, such as including only de-identified data in the ECIDS. Evaluate the benefits and limitations of any approach or ECIDS model based on the outcomes your state hopes to achieve.

Once you have determined the system model, conduct an inventory of relevant data elements from each contributing data system to ensure accurate data mapping and a common set of definitions and terminology across systems and contributing agencies. As part of this process, the ECIDS Leadership Team should review data-retention policies for each program contributing data, as these policies may vary widely. If you plan to use ECIDS data for longitudinal analyses, consider how you will make sure that data are available for the necessary time period. The ECIDS Leadership Team also should refer to the Family Educational Rights and Privacy Act's (FERPA) requirement to destroy data at the conclusion of a data sharing agreement. In general, an education agency can retain data indefinitely subject to state and local laws.

An ECIDS can draw different types and amounts of data from one or multiple agencies' data systems and integrate them to varying degrees. Data sources can vary in their sophistication and complexity. It may be challenging to map data from data sources that are not well documented. For this reason, consider limiting the amount of data incorporated from each contributing agency or program as well as the development of initial ECIDS features until better documentation is available. Introducing data sources or system features incrementally will let the ECIDS take small but valuable steps toward achieving its long-term purpose and vision. It also shows stakeholders and users that the project is making measurable progress. As each new data collection or feature is used and evaluated, the ECIDS program can refine the development process and accelerate the rate of delivery while also building the capacity needed to sustain the system. Continuously evaluate the system's short-term goals without losing sight of the ECIDS's ability to sustain its long-term purpose and vision.

Describing the ECIDS design to stakeholders

The ECIDS Leadership Team should have already established a sound documentation process before reaching the system design stage. Stakeholders' expectations for the ECIDS can vary widely, so it is important to document the system design process and to clearly explain the ECIDS's current and planned capabilities, including when specific data and capabilities will be available. Documentation must clearly identify all data sources currently in the ECIDS and planned for future integration. Provide a road map that outlines current and future plans to help clarify expectations for short- and long-term capabilities.

At a minimum, establish a documentation process that identifies who will create and maintain documents, where they will be stored, and who will have access to them. Refer to the data governance documents and use the format and layout established for the data governance manual for additional documentation.

System design documents should cover the following:

- An outline of the ECIDS requirements
- Data dictionaries
- Stakeholder feedback and comments
- System diagrams, including visuals
- User needs
- ECIDS development processes
- Key decisions
- Process enhancements
- Other critical steps and decisions

System diagrams are valuable for explaining and illustrating the ECIDS system design and its implications to stakeholders. A presentation diagram is a high-level view intended for the general public, while a conceptual diagram includes more technical details, such as where data come from and who owns the data. Both types of diagram are useful for providing information to different audiences.

The ECIDS Leadership Team also needs to document expected outputs, user interfaces, and user expectations in terms of reports, dashboards, query results, or other features. Refer to these documented user needs as much as possible during system design discussions and progress reports as they help confirm that all efforts are aligned to the goals of the ECIDS. Good documentation ensures that all sources, systems, and key requirements are outlined and captured. The more detailed the documentation, the easier it will be to manage change in the ECIDS over time and implement future enhancements. The ECIDS's success depends on how well its processes are documented throughout the data life cycle in the face of staff turnover and other challenges. Documentation is a continuous effort, and it is never too early to start.

Establishing a unique identifier (UID) or other matching process

Assigning unique identifiers (UIDs) is an early and critical component of data system design. UIDs help identify individual children and match their data longitudinally through other sectors, such as K12 and postsecondary education. Some ECIDSs use their states' existing K12 IDs and assign them to children in all participating early childhood programs. Others use a separate early childhood ID and create a temporary linkage to data from other sectors to preserve the privacy and confidentiality of the data and meet any state confidentiality requirements. Unlike K12 data, which are usually housed in a single state education agency with multiple program areas, early childhood data may come from multiple agencies and multiple programs within each agency, as well as some stand-alone programs. When thinking about which data system model best fits the ECIDS's needs, be aware that the state's P-20W+ SLDS may need a different data model to incorporate early childhood data. When designing the ECIDS, invite a representative from the P-20W+ SLDS to contribute to the discussion about how the ECIDS design will align with the P-20W+ system.

Developing and implementing appropriate business rules for data access and privacy

Regardless of its data model, the ECIDS must meet all federal and state regulations regarding the integrity, privacy, and confidentiality of its data. The ECIDS Leadership Team must ensure that data cannot be compromised and that there are no lapses in security. Emphasize to stakeholders how the data are kept anonymous. Implementing strong and clear business rules in this area can help address concerns over individual privacy. PII, in particular, should be used only to link data from different source systems, not for other data uses. If a strong case is made to use datasets with PII, limit those data strictly to authorized

users. Review the Privacy Technical Assistance Center's resources on data privacy to ensure that you address the most common security concerns related to big data systems, and strongly consider using de-identified datasets as a standard. Address any relevant laws, regulations, and legislation in the ECIDS's internal controls and standard operating procedures.

Make sure that business rules always follow the terms of the executed data sharing agreements among the data contributors. ECIDS data governance groups can vet the business rules and work with the ECIDS Leadership Team to ensure that the correct users have appropriate levels of access. Once the business rules, data sharing agreements, and access controls are in place, develop communications plans and documentation to ensure that all operators and administrators understand and comply with federal and state confidentiality laws as well as program policies.

Establishing an effective procurement process

The ECIDS Leadership Team needs to establish processes for managing vendors, contractors, and any agreements among the agencies involved in the ECIDS. Many states rely on a combination of internal staff members and contractors to provide the technical expertise needed for a project. Use the following strategies to help identify and procure necessary skills and experience:

- Understand the expertise of internal employees and seek out vendors or contractors who can fill gaps in that capacity.
- Make professional skills and experience an important requirement when evaluating vendor proposals.
- Offer training opportunities for internal staff members to learn new skills and new technologies that will be introduced as a result of the ECIDS project.
- Implement products and tools that align with the expertise of available personnel, when possible, whether they are internal staff members or contractors.
- When using a vendor with proprietary products such as code, make a plan for securing expertise in that product through existing ECIDS staff or from contractors in case the vendor discontinues the product or goes out of business.
- Consider using industry-standard technology solutions that can be transferred easily from one vendor to another if needed.
- Include provisions in vendor contracts covering knowledge transfer so that ECIDS staff members or other vendors can support the solution in the future.

The ECIDS Leadership Team should seek as much information as possible from other states about their experiences using certain products and vendors, as well as review SLDS resources about working with vendors.

Allowing linkages to the P-20W+ SLDS

If your state is developing or has a P-20W+ SLDS, the ECIDS system model should reflect the purpose for including early childhood data in the SLDS. The P-20W+ SLDS's system design has been carefully considered, and it is important to plan for how ECIDS data will be used in the P-20W+ SLDS to create longitudinal data. In a centralized ECIDS model, early childhood data from across all participating programs and agencies can be fed into the P-20W+ SLDS from a consolidated database or data warehouse. A federated ECIDS model may present more challenges for sharing data with the P-20W+ SLDS. Consider whether to maintain linkages between ECIDS and P-20W+ SLDS data and identify those data over the long term. Carefully evaluate the goals and ultimate vision for connecting the ECIDS and P-20W+ SLDS. The data system model chosen for the ECIDS, as well as its implications for data retention, may be an important factor in the state's ability to achieve its long-term goals for both data systems.

Data Use

Data use is the process by which people examine and make sense of data to inform decisions and actions. In this process, stakeholders combine prior knowledge and experience with data to gain new knowledge that informs action. The ECIDS demonstrates its value and achieves its purpose and vision when stakeholders use its data. Data use can inform stakeholders' work, measure program effectiveness, and shape state and local policies.

Identifying the data use priorities of the ECIDS early on can help establish clear, realistic expectations for how the system will be able to help meet instructional, programmatic, and policy goals.

Creating a data use strategy to ensure that the system responds to users' information needs is a critical responsibility of the ECIDS Leadership Team. **FIGURE 5** depicts the phases of a well-designed data use strategy that promotes effective, widespread use of information from an ECIDS.

Identifying and prioritizing intended users

Begin identifying user roles by listing all current and potential early childhood data users, including policymakers, program staff members, providers, teachers, parents, and the general public. Then, refer back to the ECIDS's purpose, vision, and associated essential questions to determine which roles the system must serve to achieve its objectives. If data use by a particular role is not critical to achieving the ECIDS' goals, that role can be prioritized lower or excluded from the initial data use strategy. Revisit the data use strategy periodically to determine whether a role should be included at a later date.

After identifying user roles, begin prioritizing them by considering the following questions:

- What types of decisions does each user role make that have an impact on the ECIDS's purpose and vision?
- What types of decisions could each user role inform that would have an impact on the purpose and vision?
- Will the ECIDS have the data that are relevant and appropriate to those roles?

Prioritizing roles based on these questions ensures that the ECIDS's limited resources serve and support the highest-impact users, and it increases the likelihood of achieving the ECIDS purpose and vision.

Once the top-priority user roles are identified, clarify the types of decisions and actions associated with each role that the ECIDS data can inform, as well as how those decisions align with the broader purpose,

FIGURE 5. The Data Use Framework
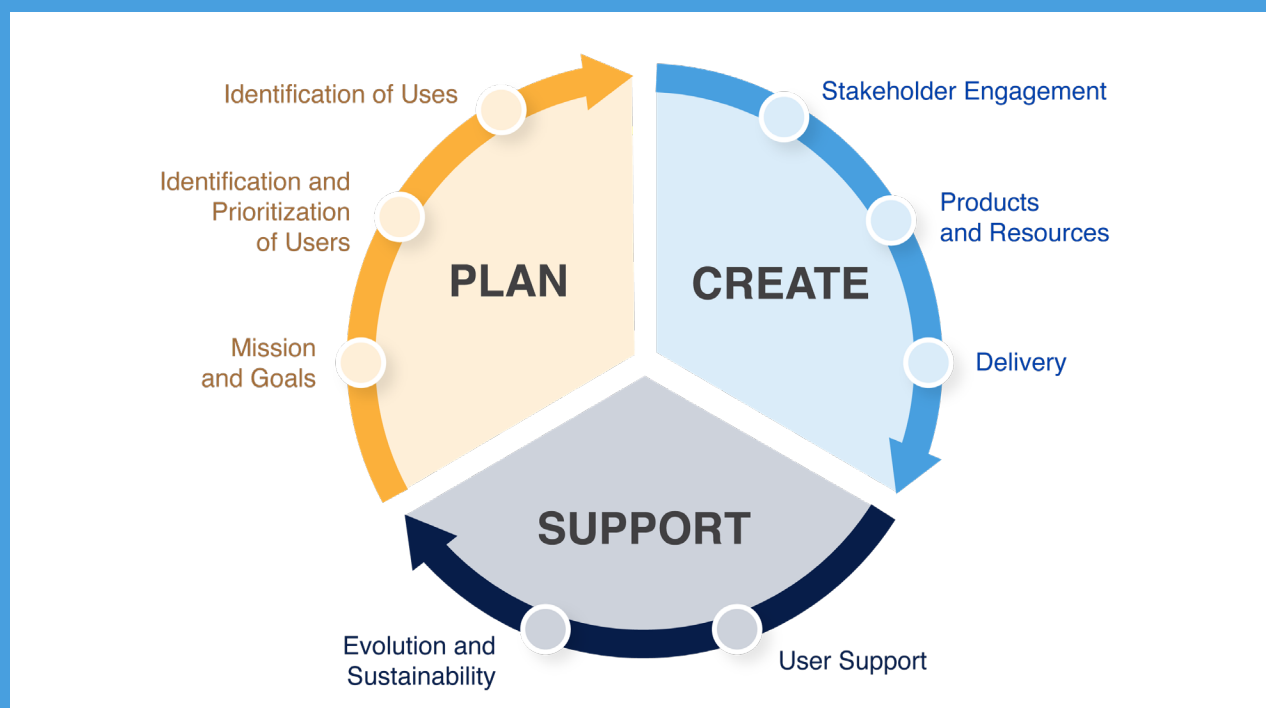
vision, and essential questions. Consider interviewing representative groups of high-priority users to help identify what data will excite them, help them improve their work, or reduce their burden. Because data work is often distributed across people, time, and locations, consider interviewing teams as groups to gain insight from multiple roles and backgrounds.

After identifying potential data uses, evaluate whether the ECIDS will have data that are appropriate and relevant to those uses. Data's usefulness to inform decisions is determined by their level of detail, timeliness, frequency of collection, and quality. Consider users' daily, monthly, and yearly work cycles to determine whether the ECIDS will be able to provide data when users need them. **TABLE 3** shows examples of potential ECIDS users, their particular interests and needs, and examples of how they might use data.

If the state also has, or has planned, a P-20W+ SLDS that contains early childhood data, clarify–and make sure that leaders can explain–both the differences between the ECIDS and the early childhood components of the P 20W+ system and how they relate to one another. Doing so will help users understand

the distinct value of each system, as well as how they complement each other. If some user roles potentially could be served by both systems, communicating the distinction will help them understand the purposes for which they would use the ECIDS versus the P-20W+ SLDS.

Identifying and developing useful data products

Engage the ECIDS's intended audiences to identify and develop data products that the system will produce, either through existing stakeholder groups or through new representative group(s) of users. The ECIDS Leadership Team should determine whether an appropriate group already exists that includes representatives of high-priority ECIDS user roles and, if so, explore whether it can get on the group's agenda rather than convening a new group. Representatives of each high-priority user role also need to be included in the project's stakeholder engagement plan to ensure that role-specific needs and feedback are addressed. Periodically revisit the list of key stakeholders needed for ongoing enhancement and use of the ECIDS to make sure that it includes new user groups or decisionmakers.

TABLE 3. Potential ECIDS users

Users	Interest or Need	Example Data Use(s)
Policymakers and legislators	Inform policy development, revision, and funding decisions	Resource allocation, program evaluation, legislative actions
Program leaders	Improve program effectiveness and efficiency	Program evaluation, resource allocation, staffing needs, community needs, program development, program planning
Educators	Inform decisions to improve local-level learning environments	Resource allocation, staffing needs, instructional approaches, student placement, curriculum development
Researchers	Assess the impact of policies and programs on students and education entities	Research questions, program evaluation, policy evaluation
Families	Support learning and inform decisions about placement in available programs	Decisions about which programs to send their child to, resources available

To make the most of stakeholders' limited time, the ECIDS Leadership Team needs to establish and document when and how it will convene stakeholders and garner their feedback as data products are identified and developed. Key steps in this process include

- helping stakeholders identify the critical questions that they hope to answer with data;
- helping stakeholders determine the format in which they need the data in order to use them easily;
- providing examples of essential questions and associated data reports or displays to help stakeholders identify what products would be most useful to them; and
- understanding how data needs may change throughout the calendar year so that data resources are delivered when most needed.

When selecting data reporting, presentation, and other tools, keep in mind the targeted users' technology skill levels and population size. For example, business intelligence tools might be helpful to empower some users but can overwhelm less data-savvy users. Consider implementing a limited or differentiated suite of data reporting and analysis tools to address the range of users' expertise.

Additionally, consider how much users will want to conduct their own data inquiries. Some users want to be able to filter, create subgroups, and examine many levels of data across several domains. Other users prefer predefined dashboards that display key metrics. Data displays and interactive features should align with the types of questions that the data are meant to address. Straightforward, simple questions are best addressed with simple graphical displays, while more nuanced questions—such as those requiring longitudinal analysis across multiple domains—need a more dynamic data presentation.

The ECIDS Leadership Team should set aside time and create a clear follow-up process to vet draft data products with stakeholders before they are released. Vetting should include both checks for data quality and feedback on whether the format, granularity, drill-down options, and visual displays meet user needs. Before the products are released, the ECIDS data governance groups also should check them for compliance with the ECIDS data sharing agreements and Section 508 accessibility, as appropriate.

As the ECIDS Leadership Team garners and responds to stakeholder feedback on draft ECIDS data products, it needs to establish a rollout and release process to ensure that products are delivered to users at a time when they can inform users' work. For example,

if a report is intended to inform program funding allocation decisions, confirm when those decisions are made and ensure that the report is available to users beforehand. Learn about users' work requirements and timelines through interviews and other stakeholder engagement activities, and use that information to deliver ECIDS products in a way that is intuitive and does not burden users. Consider the following strategies for rolling out new products:

- *Conduct a pilot rollout*. Pilots can help effectively gauge how well products meet intended users' needs before a full release. The ECIDS Leadership Team can solicit targeted, valuable feedback that can greatly increase the success of the full implementation.
- *Communicate clearly about the rollout approach*. The ECIDS Leadership Team should ensure that as many intended users as possible know about the ECIDS, what it will produce, how to access its data products, and when the products will be available. Ongoing, consistent communication is much more effective than one-time announcements.

After the initial rollout, the ECIDS Leadership Team should assess what factors prompt users to access the products initially and continue to use them. Consider conducting targeted feedback sessions with stakeholder groups to capture how they use the resources and then sharing these use cases with ECIDS leaders in other states.

Providing appropriate user supports

Developing users' capacity to access and use the ECIDS is critical to its success. Users need to know many facets of the ECIDS to be able to successfully integrate its data into their work and role. For example, users will need to be able to answer the following types of questions:

- How do I access the ECIDS?
- How does the ECIDS benefit me?
- What data are included in the ECIDS?
- How do I use the ECIDS interface?
- How do I interpret the data in the ECIDS?
- How can I expect to use the data in the ECIDS?
- How do I use ECIDS data securely?
- Where do I go for help?

Design a training plan that does not assume that users will automatically know the answers to the above questions. Make sure that the training plan encompasses all of the supports that will be provided to high-priority users. This plan should include training on data privacy and security best practices, including relevant laws like the Family Educational Rights and Privacy Act (FERPA) and Health Insurance Portability

and Accountability Act (HIPAA). Tailor training to meet the specific needs of various stakeholders.

Training should help users understand and use the ECIDS and its resources. It can be delivered through in-person presentations, webinars, online recordings, and written publications. When possible, let users access data from their own programs, sites, or offices during training. Combining ECIDS training, data literacy, and data use motivates users to learn the system and embeds ECIDS training within the real-world priorities that the data system is designed support.

Data use training is essential to help users build their knowledge about their professional roles and the people they strive to support. This training is especially important for those with limited prior experience in the field or with using data. Training should encourage users to see the data as the start of the investigation, not the endpoint. In other words, answering one question with evidence should lead them to ask additional questions to understand an issue more fully. This approach can also help users avoid jumping to conclusions about what the data show. Have content experts lead the data use training to model how to use data to improve policy and practice. One of the hallmarks of a successful ECIDS is that stakeholders' demand for data increases in volume and complexity.

The ultimate purpose of data use should not be simply to inform, but also to spur users to act on information. Users should be able to do their work differently as a result of having evidence to inform it. However, using data to change behavior may be a cultural transformation that requires significant support. Data use training should help users consider what they will do once they know more and provide them with resources to help improve their practice. Such resources can include quality, targeted professional development; mentoring opportunities with peers; and research on best practices. Share the ECIDS purpose and vision with users to help them understand how their roles fit into the ECIDS's broader goals. Additionally, consider documenting in your training materials successful and encouraging examples of how stakeholders have used ECIDS data.

The ECIDS Leadership Team likely will not have the resources or expertise to support this type of training on its own. It should pursue partnerships with other agencies or organizations that already work with ECIDS users and that share the project's end goals, such as higher education institutions, nonprofits, provider preparation programs, and other state agencies. It should also consider partnerships

with other program areas within the lead ECIDS agency, such as a professional development office. These partners can help users understand the data, transform information into knowledge, and put the knowledge into action. Trainers must be able to communicate using language, terminology, and experiences that users will understand.

Keep in mind that training is an ongoing need that never goes away. Organizations and programs with higher staff turnover or less experienced stakeholders will need more training and support than those with more capacity and experience using ECIDS data.

Ensuring that user needs are met over time

After the initial rollout of the ECIDS, it is critical to put processes in place to meet users' needs as they change and grow over time. Ideally, the initial rollout will help increase demand for ECIDS data. The ECIDS Leadership Team should take advantage of the groups and processes established during the initial rollout to design an approach for gathering ongoing feedback from the high-priority user roles. Ask users how and whether the system is supporting their needs, as well as what information they think will be useful in the near future. At the same time, the ECIDS Leadership Team should consider how to identify additional users, particularly as state policy and program needs change or as critical questions are updated.

The ECIDS Leadership Team must anticipate emerging issues and policies to ensure that the ECIDS continues to be a valuable resource. The team must determine how to prioritize user-requested changes and additions to the ECIDS and communicate which changes and additions will be available.

The ECIDS Leadership Team must also consider how to determine who is using the ECIDS and its products, when, and for what purposes. Along with anecdotal feedback, it should collect usage metrics such as the percentage of the user population engaging with the ECIDS; the products they use; the frequency, timing, and duration of their use; and the impact of their use. This information can help the ECIDS Leadership Team measure how the system helps users move toward and achieve their goals. Usage metrics offer insight into the highest-demand resources and can help communicate the value of the ECIDS. The team can use audience feedback and usage metrics to identify which data key user roles consider essential and how they are using those data to support broader goals, which will ultimately help sustain the ECIDS over time. Ask users to explain how the ECIDS supports their work, and include these stories in outreach and training efforts.

Coordinating user supports between the ECIDS and P-20W+ SLDS

If your state is developing or has a P-20W+ SLDS that produces resources containing early childhood data, coordinate with early childhood representatives from the P-20W+ SLDS to ensure that (1) users served by both systems understand why they would use or make requests of one system versus the other, and (2) the systems use limited state resources efficiently. The P-20W+ and ECIDS data governance groups should collaboratively establish criteria and a process for determining whether a data request or other data need will be fulfilled by the ECIDS, the P-20W+ SLDS, or not at all. This process will help establish the distinct yet complementary roles of the two systems in serving early childhood data users.

Early childhood executive leaders should be involved in identifying the P-20W+ SLDS's top-priority early childhood user roles and the types of decisions those users expect to make with SLDS data. P-20W+ SLDS data uses should focus on questions that require linkages to data beyond the early childhood sector. This distinction will help clarify that the ECIDS serves early childhood data needs and the P-20W+ SLDS serves data uses requiring data from multiple sectors. Ask early childhood representatives in the P-20W+ data governance group to help inform SLDS data products for early childhood users, as they will have the most in-depth understanding of early childhood users and uses.

When drafts of early childhood data products are available in the P-20W+ SLDS, the ECIDS data governance groups should have a process for vetting them with the intended users and providing feedback to the P-20W+ SLDS team. Similarly, the ECIDS data governance groups should have a means of prioritizing requested changes and additions to the early childhood data products from the P-20W+ SLDS and communicating them to the P-20W+ data governance group.

Sustainability

Sustainability is the capacity to support an ECIDS over time with sufficient human, organizational, and material resources to meet current and future needs. Building this capacity should be a focus from the initiation of the ECIDS and continue over time as the work evolves. There are four foundational aspects of ECIDS sustainability: broad and deep stakeholder support, widespread use of data and tools, demonstrated return on investment, and long-term commitments of fiscal and human resources (**FIGURE 6**).

Demonstrating value and quantifying use of the ECIDS

Sustainability is crucial to an ECIDS. Often the system is created using grant funds that are available for a limited period of time, but the system must exist beyond the grant period to achieve its purpose and vision. Producing an enduring, efficient, effective, and sustainable ECIDS is not a start-and-finish endeavor; there will always be more work to do to ensure that it remains current and relevant. Sustainability can take many forms, the most important of which often is showing the data's value in informing decisions.

Tracking ECIDS system usage and metrics will help the ECIDS Leadership Team measure the use of and need for the system, as well as identify additional needs as the use of the ECIDS expands. It is important to periodically engage all agencies participating in the ECIDS, as well as other stakeholders, to discuss

FIGURE 6. The Sustainability Framework

Creating a sustainability plan

Developing a sustainability plan is important for defining how the ECIDS will continue to be used over time, who will have access to it, and how it will be governed. The plan should also describe the ongoing funding and personnel needed to support the system, including suggestions, recommendations, or statements of funding sources and how the funds will be obtained if they have not been already. In addition, the plan should outline how stakeholders and the public will continue to receive information about the ECIDS. Transparency is an important part of communicating about the evolving use of the ECIDS. For more information, see the *Sustainability Plan Guide & Template: ECIDS and SLDS (https://slds.ed.gov/#communities/pdc/ documents/10501)*.

evolving needs and ensure that they remain invested in the ECIDS. The ECIDS communications plan should include tasks supporting a formal effort to market and communicate about the ECIDS with current and potential stakeholders–including sharing usage metrics–to secure their ongoing support.

As the ECIDS expands and grows, determine how to measure the value it brings the state and how it supports the stated purpose and vision. The ECIDS's value can be measured in many ways, such as the additional capabilities it brings the state as well as the time, cost, and other resources saved by its tools and processes. Such return on investment calculations help demonstrate the ECIDS's contribution to the success of the state's early childhood programs and policies. Early childhood executive leaders must be able to communicate the ECIDS's return on investment to a variety of audiences. Document the system's use, successes, and benefits from the beginning so that leaders can demonstrate and explain the need for its data. Sharing data stories and communicating openly about the system in terms of small, incremental milestones helps show progress and garner continued support from the public.

Additionally, the ECIDS Leadership Team should periodically brainstorm how to create more demand for the system and its products. It is important to think strategically about creating ways for all stakeholders to use the ECIDS, as they can be important allies when budget cuts or political pressures emerge. Engaging stakeholders helps increase broader understanding of the ECIDS and its purpose, as well as fostering continued support for its use.

Identifying and securing resources to maintain and enhance the ECIDS

State agencies are often asked to justify their budgets, and it is necessary to understand clearly how much the ECIDS and its tools and data integration cost. Lead ECIDS agencies may be asked for 3- to 5-year cost plans that break down the costs of each component of the ECIDS. Keep a current inventory of ECIDS components to help give an accurate estimate of the system's expenses. Categorize components as being related to hardware, software, or human resources. Expenses, licenses, and funding sources for these items may be handled differently.

When developing the cost plan, make sure that early childhood executive leaders have clearly defined and endorsed the ECIDS's scope. This step will help ensure that the plan encompasses the entirety of the ECIDS and its objectives. The plan should cover the current scope as well as account for future modifications and enhancements to keep the ECIDS relevant and functioning as technology advances.

Keep detailed cost information on hand to prioritize expenses in case you need to make difficult decisions about the ECIDS. Similarly, do not become too comfortable with the system in its current state–it is important to be creative and think about ways to maintain the data and provide them more efficiently across agencies. Track modifications and enhancements that are made to the ECIDS, as well as changes to licensing agreements, to keep accurate records of changing costs and keep the ECIDS inventory up to date.

As the ECIDS grows, it may need additional staff and new skills to support it adequately. While developing the ECIDS, the ECIDS Leadership Team should evaluate the staff and skills it will need and use that information to secure enough full-time equivalent positions and adequately train staff members with the appropriate experience and skills.

Documenting ECIDS processes and procedures will help equip new staff members with the knowledge they need as they step into their roles and educate existing staff members when their duties change during the ECIDS implementation. Cross train staff members and let them become familiar with others' roles to deepen their knowledge and ensure that roles and tasks do not depend on a single individual.

The ECIDS Leadership Team should encourage continued awareness of the ECIDS by communicating about and marketing the system on a regular basis. These efforts help maintain support for and recognition of the ECIDS, which can help secure sufficient funding to sustain it. Funds might be secured through state budget line items or through partner agency budgets. The ECIDS Leadership Team's cost plan will determine the amount of funding needed. Be aware of funding options from nonfederal sources. Some ECIDS agencies ask their states to match federal funding. Others have separated the design and the maintenance of the system into different funding streams to maintain the system even if funding becomes unavailable for design work. Regardless of the ECIDS's funding sources, actively engage the heads of partner agencies as well as state legislators to foster support and funding.

Supporting ongoing state data initiatives across sectors

If your state is developing or has a P-20W+ SLDS, the role of early childhood programs and agencies will shift from driving ECIDS development to serving as stakeholders and partners for the P-20W+ SLDS. The expertise brought by early childhood representatives can help inform and educate the other P-20W+ partners as early childhood data are integrated into the SLDS. The ECIDS Leadership Team should have a clear idea of how early childhood fits into the larger education picture within the state, as well as how early childhood data can support the state's broader P-20W+ policies.

The ECIDS Leadership Team should track the costs associated with integrating early childhood data into the P 20W+ SLDS. Early childhood programs may not be responsible for securing the funds to include early childhood data in the P-20W+ SLDS, but they can support and inform those who are.